BOHLWEKI SSI

Environmental

ENVIRONMENTAL SCOPING REPORT FOR THE PROPOSED 40MW OPEN CYCLE GAS TURBINE POWER PLANT IN THE AMERSFOORT AREA, MPUMALANGA

A PROJECT OF ESKOM HOLDINGS LIMITED

8 OCTOBER 2009

SSI, Environmental Sector

Johannesburg
Building No. 5 | Country Club Estate
21 Woodlands Drive | Woodmead | 2191
PO Box 867 | Gallo Manor | 2052 | Gauteng | South Africa
Telephone | +27 11 798 6001 | Facsimile | +27 11 798 6010
Email | info@bohlweki.co.za | Website www.ssi-dhv.com

Durban
Ground Floor | SSI House | 6 Payne Street | Pinetown | 3610
PO Box 55 | Pinetown | 3600 | KwaZulu-Natal | South Africa
Telephone | +27 31 719 5500 | Facsimile | +27 31 719 5505
Email | info@bohlweki.co.za | Website www.ssi-dhv.com

George
Suite 101 | Bloemfontein Building | 65 York Street | George | 6529
Postnet Suite #200 | Private Bag X6590 | George | 6530 | Western Cape | South Africa
Telephone | +27 44 802 0600 | Facsimile | +27 44 802 0650
Email | info@bohlweki.co.za | Website www.ssi-dhv.com

Pretoria
Fountain Square | 78 Kalkoen Street
Monument Park Ext. 2 | Pretoria | 0181
PO Box 25302 | Monument Park | 0105 | Gauteng | South Africa
Telephone +27 12 367 5800 | Facsimile +27 12 367 5878
Email | info@bohlweki.co.za | Website www.ssi-dhv.com

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Prashika Reddy		

Reviewer

Malcolm Roods

Approval

Malcolm Roods

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ABBREVIATIONS

CCGT	Combined Cycle Gas Turbine
DEAT	Department of Environmental Affairs and Tourism
DW&EA	Department of Water and Environmental Affairs
DME	Department of Minerals and Energy
DWAF	Department of Water Affairs and Forestry
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESS	Environmental Scoping Study
FGM	Focus Group Meeting
I&AP	Interested and Affected Party
IEP	Integrated Energy Planning
ISEP	Integrated Strategic Electricity Plan
MDALA	Mpumalanga Department of Agriculture and Land Administration
NEMA	National Environmental Management Act (Act No 107 of 1998)
NERSA	National Energy Regulator of South Africa
NGO	Non-Governmental Organisation
NHRA	National Heritage Resources Act (Act No 25 of 1999)
OCGT	Open Cycle Gas Turbine
SAHRA	South African Heritage Resources Agency
SANRAL	South African National Roads Agency Limited
UCG	Underground Coal Gasification

GLOSSARY OF TERMS

Alternatives	Different means of meeting the general purpose and requirements of the activity, which may include site or location alternatives; alternatives to the type of activity being undertaken; the design or layout of the activity; the technology to be used in the activity and the operational aspects of the activity.
Aquifer	A geologic formation of porous rock, often sandstone that stores water, An aquifer may yield significant quantities of water to wells and springs and this water is often utilized as a primary source for municipal, industrial, irrigation and other uses.
Calorific Value	The quantity of heat that can be liberated from one kilogram of coal.
Coal	A solid, brittle, more or less distinctly stratified combustible carbonaceous rock formed by partial to complete decomposition of vegetation; varies in colour from dark brown to black; not fusible without decomposition and very insoluble.
Coal Gasification	The conversion of coal into a gaseous fuel.
Combustion	Burning coal with O_2 to make CO_2 and heat.
Combustion chamber	The part of a gasifier in which coal is oxidized.
Condensate	The liquid product that condensates from the raw gas when initially cooled and contains mainly water with water soluble hydrocarbons and solids of tar and ash.
Core sample	A cylinder sample generally 1-5" in diameter drilled out of an area to determine the geologic and chemical analysis of the overburden and coal.
Cumulative impact	The impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.
Depth	The word alone generally denotes vertical depth below the surface. In the case of boreholes it may mean the distance reached from the beginning of the hole, the borehole depth.
Do-nothing alternative	The 'do-nothing' alternative is the option of not undertaking the proposed activity.
Environmental Impact Assessment (EIA)	In relation to an application to which scoping must be applied, means the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of that application as defined in NEMA.
Extraction	The process of mining and removal of cal or ore from a mine.
Fault	A slip-surface between two portions of the earth's surface that have moved relative to each other. A fault is a failure surface and is evidence of severe earth stresses.
Gasification	Any of various processes by which coal is turned into low, medium, or high CV gases.

Gas turbine	The gas turbine (also called a combustion turbine) is a rotary engine that extracts energy from a flow of combustion gas.
Goaf	The term applied to that part of the mine from which the coal has been removed and the space more or less filled up with waste or overburden. Also, the loose waste in a mine.
Grey Water	Water containing gasification condensables.
Groundwater	Water in the ground that is in the zone of saturation from which wells, springs, and groundwater run-off are supplied.
Hydrology	The science encompassing the behaviour of water as it occurs in the atmosphere, on the surface of the ground, and underground.
Interested and Affected Party (I&AP)	Any person, group of persons or organisation interested in or affected by an activity; and any organ of state that may have jurisdiction over any aspect of the activity.
Overburden	Layers of soil and rock covering a coal seam. In surface mining operations, overburden is removed prior to mining using large equipment. When mining has been completed, it is either used to backfill the mined areas or is hauled to an external dumping and/or storage site.
Plan of Study for Environmental Impact Assessment:	A document which forms part of a scoping report and sets out how an environmental impact assessment must be conducted.
Public Participation Process	A process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, specific matters.
Raw gas	The product gas of gasification containing all substances of the process.
Red Data Species	Species listed in terms of the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species, and/or in terms of the South African Red Data List. In terms of the South African Red Data List, species are categorised as being extinct, endangered, vulnerable, rare, indeterminate, insufficiently known or not threatened.
Seam	A stratum or bed of coal.
Subsidence	The gradual sinking, or sometimes abrupt collapse, of the rock and soil layers into an underground mine. Structures and surface features above the subsidence area can be affected.
Underground Coal Gasification:	UCG is a process carried out on “unminable” coal seams. These are coal seams that cannot be mined by using the conventional coal mining methods e.g. open cast or underground mining. UCG involves injecting steam and air (or oxygen) into a cavity created in an underground coal seam, to form a synthetic natural gas.

1. INTRODUCTION

Eskom Holdings Limited (Eskom) is mandated by the South African Government to ensure the provision of reliable and affordable power to South Africa. Eskom currently generates approximately 95% of the electricity used in South Africa. Electricity cannot be stored in large quantities and must be used as it is generated. Therefore, electricity must be generated in accordance with supply-demand requirements. In addition, increasing economic growth and social development within Southern Africa is placing a growing demand on energy supply. Coupled with the rapid advancement in community development, is the growing awareness of environmental impact, climate change and the need for sustainable development.

Eskom's core business is in the generation, transmission (transport), trading and retail of electricity. In terms of the Energy Policy of South Africa "energy is the life-blood of development". Therefore, the reliable provision of electricity by Eskom is critical for industrial development and related employment and sustainable development in South Africa.

Underground Coal Gasification (UCG), a process whereby coal is converted in situ into combustible gas that can be used for power generation, is one of the new clean coal technologies being developed for implementation by Eskom. The technology has been through 8 years of intensive research by Eskom since 2001 to achieve a better understanding of the gasification process, and the nature of the gas produced. In order to meet the fuel requirements for optimal power generation from Majuba Power Station, Eskom proposes the use of syngas produced by the UCG process, as a supplementary fuel source within the boilers at the power station as well as fuel for an eventual 2100 MW combined cycle gas turbine (CCGT)[1] power plant being planned for the area.

The proposed project therefore focuses on the construction of an initial 40MW open cycle gas turbine (OCGT) plant with the intent to evaluate and demonstrate the concept of using UCG gas for the electricity generation *via* turbines and demonstrate the sustainability of the UCG process.

1.1. Project Background and Need

Eskom is developing the UCG project in a phased manner:

Phase 1A - Exploration for coal reserves
Exploration work was carried out to determine the size and nature of the coal reserve.

[1] This proposed project is the subject of a separate EIA process/study.

Phase 1B - Testing activities to determine the coal gas quality and combustion properties

Gas production to start from 3,000 and increased to 15,000 Nm^3/h. Eskom commissioned the gas production pilot plant which flared the first UCG gas on 20 January 2007, and subsequently generated the first UCG electricity on the 31st May 2007 with a 100 kWe reciprocating engine. Gas is initially being flared and will eventually be co-fired in Majuba Power Station boilers as the work progresses.

Phase 2 - Increased production, co-firing testing and engineering design

Gas production to be increased to 105,000 Nm^3/h. Gas will be produced and transported to Majuba Power Station for co-firing. In the interim, the engineering design for the 40MW plant will commence.

Phase 3 - Open cycle gas turbine demonstration plant

Gas production - 105,000 Nm^3/h. This phase involves the construction of a 40 MW open cycle gas turbine demonstration plant which will form the basis for the specification of all future plants.

This Environmental Impact Assessment (EIA) is for the construction of the 40MW open cycle gas turbine (OCGT) demonstration plant and associated infrastructure. The aim of this project is to increase the power generation in a phased manner while testing the gas production capability and electricity generation sustainability and will form the basis for the specification of all future plants (commercial application for the 2100MW Combined Cycle Gas Turbine plant). Electricity produced will be utilised by the UCG plant and any excess will be entered into the National Grid *via* Majuba Power Station systems.

The footprint of the 40MW is approximately 20ha and will be located next to the Majuba Power Station in the Mpumalanga Province on the farm Roodekopjes 67HS (refer to Figure 1.1). The OCGT power island will include a 40MW gas turbine, generators, generating transformers, H_2 plant, HV yard and chimney. The associated infrastructure includes UCG mining infrastructure (boreholes, injection wells and pipes), gas treatment plants, a water treatment plant, gas collection and transportation pipes, 88kV transmission line, auxiliary cooling system (cooling towers), access roads, centralized control room, ablution facilities, lined evaporation dam and delivery and collection bays for road transport to all chemical solvent and by-product tanks.

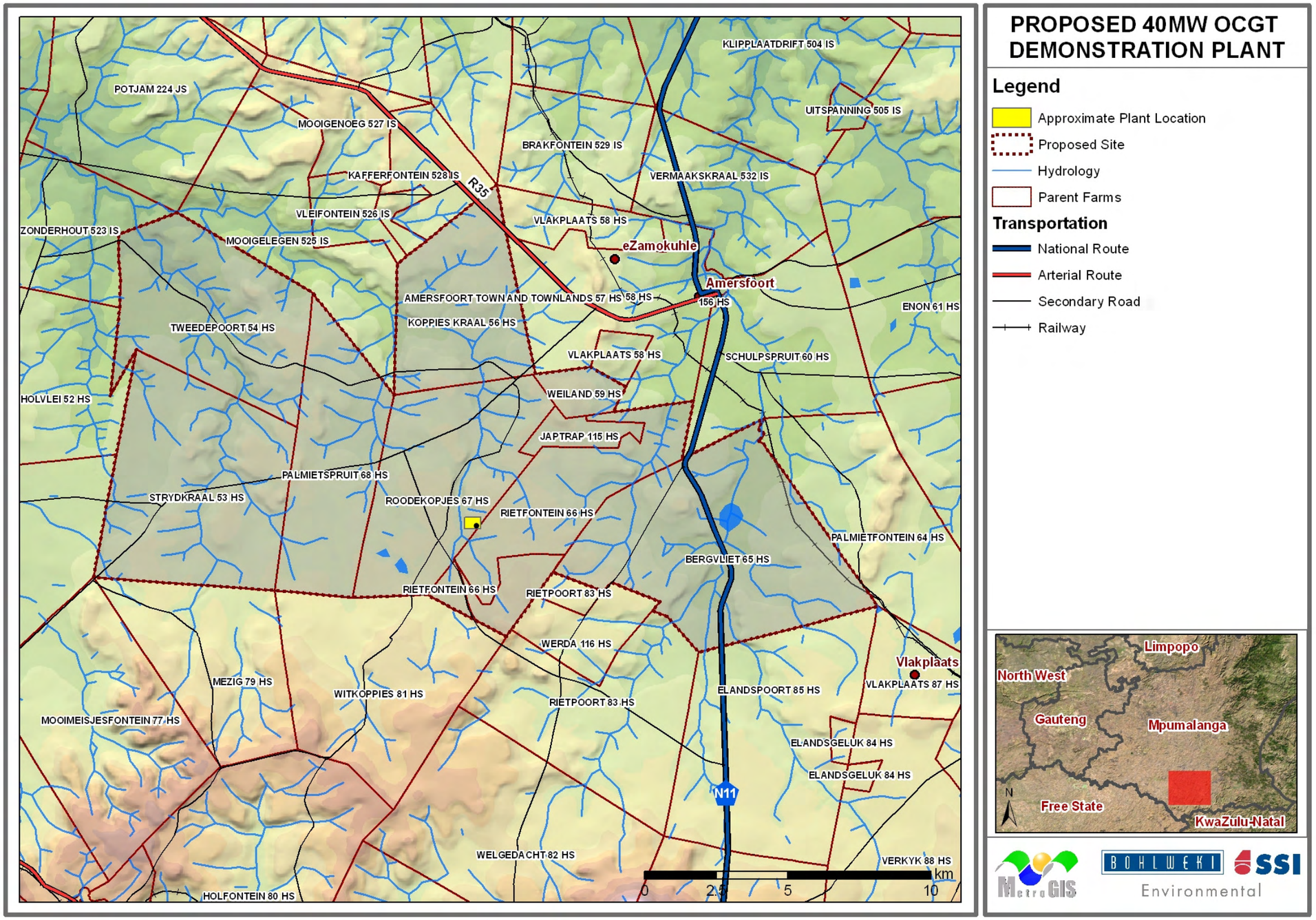

Figure 1.1: Locality Map showing the location of the proposed 40MW demonstration plant

1.2. Approach to the EIA Study

The environmental impacts associated with the proposed project require investigation in compliance with the Environmental Impact Assessment Regulations published in Government Notice No. R. 385 to No. R. 387 and read with Section 24 (5) of the National Environmental Management Act - NEMA (Act No 107 of 1998) (as amended) – see Figure 1.2. The required environmental studies include the undertaking of an Environmental Impact Assessment (EIA) process. This process is being undertaken in two phases:

- **Phase 1** - Environmental Scoping Study (ESS); and
- **Phase 2** - Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP).

This EIA study will also be used to support the Mining Right application for the UCG project which is currently operating under a renewed prospecting right issued by the Department of Minerals and Energy on 24 February 2009 (MP30/5/1/1/2/1144 PR).

1.2.1. Environmental Scoping Study

The ESS provides a description of the receiving environment and how the environment may be affected by the development of the proposed project. Desktop studies making use of existing information, and ground-truthing through site visits, will be used to highlight and assist in the identification of potential significant impacts (both social and biophysical) associated with the proposed project.

Additional issues for consideration will be extracted from feedback from the public participation process, which commenced at the beginning of the Scoping phase, and will continue throughout the duration of the project. All issues identified during this phase of the study will be documented within this Environmental Scoping Report. Thus, this Environmental Scoping Report will provide a record of all issues identified as well as any fatal flaws, in order to make recommendations regarding the project and further studies required to be undertaken within the EIA phase of the proposed project.

The Scoping Study aims to address the following:

- description of the site selected for the proposed 40MW OCGT power plant and associated infrastructure;
- identification of potential significant positive and negative environmental (biophysical and social) impacts, and an evaluation of their significance in terms of the project;
- undertaking of a fully inclusive public participation process to ensure that Interested and Affected Party (I&AP) issues and concerns are recorded and form part of the EIA process.

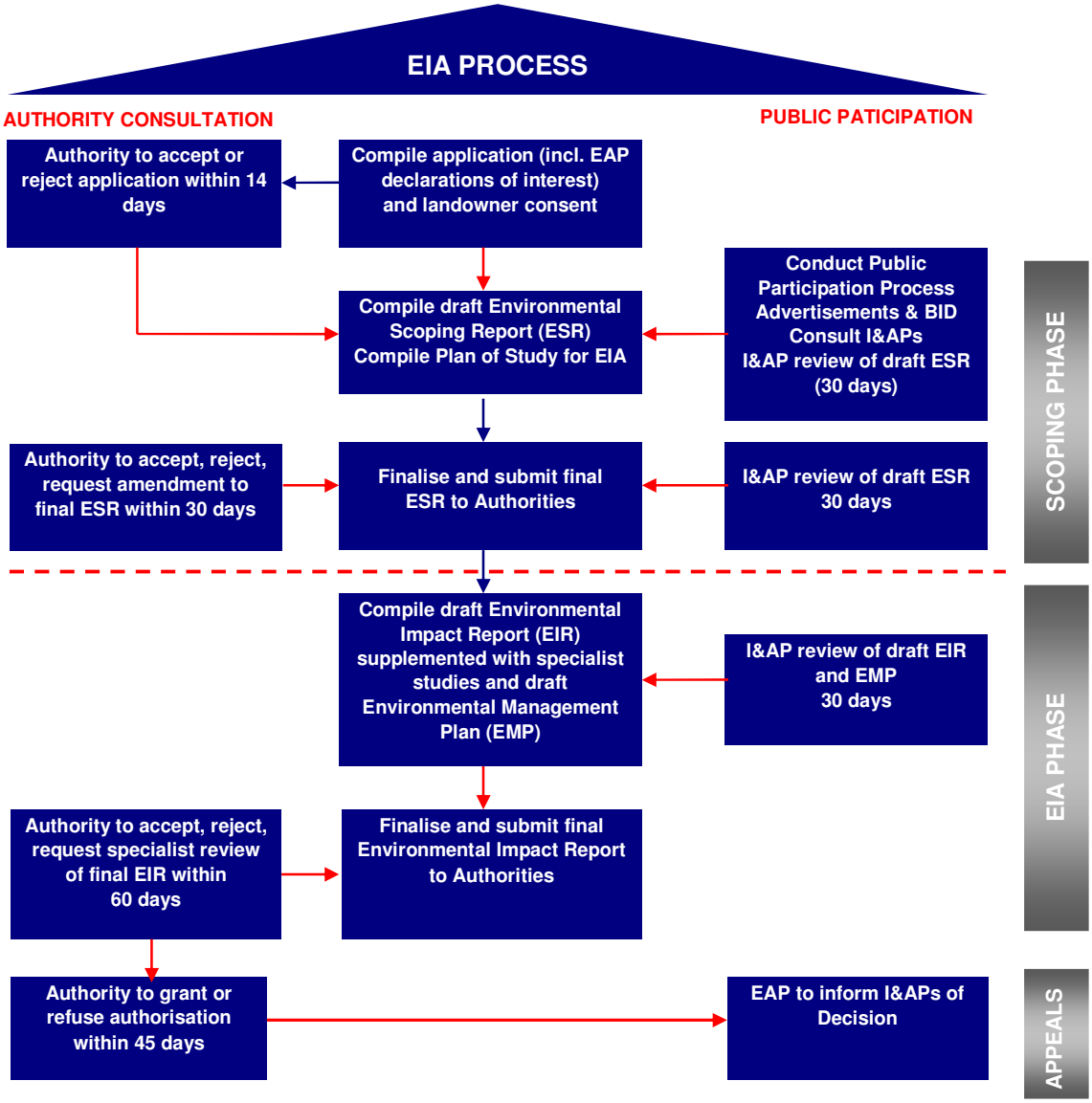

Figure 1.2: EIA process

The Scoping Study will identify any fatal flaws, site alternatives (for the gas treatment plants) and mitigation alternatives to be evaluated and investigated during the EIA phase of the project. Impacts related to soil and agricultural potential, terrestrial and aquatic biodiversity (fauna and flora), wetlands, social and micro-economic aspects, air quality; heritage and visual impacts have been investigated in this ESS (refer to Table 1.1). Issues that are considered to be of significance will be recommended for further investigation and assessment within the EIA phase of the project.

The Scoping Study will also allow for the peer review of geological, geohydrological (groundwater) as well as hydrological (surface water) assessments that have been ongoing for the past 3 - 4 years for the UCG study area.

Table 1.1: Specialist studies undertaken as part of the Scoping Study

SPECIALIST FIELD	ORGANISATION
Geohydrology	R Meyer (Private)
Soils and Agricultural Potential	Terra Soil Science
Fauna and Flora	Bathusi Environmental Consulting
Hydrology	Jones and Wagner
Wetlands	SiVEST
Baseline Social Study and Micro-economic study	MasterQ Research
Air Quality	Bohlweki-SSI Environmental
Visual aspects and aesthetics	MetroGIS
Heritage	National Cultural History Museum

1.2.2. Environmental Impact Assessment Study

The Environmental Impact Assessment phase will aim to achieve the following:

- to provide an overall assessment of the social and biophysical environments of the affected area by the proposed construction of the CCGT plant and associated infrastructure;
- to undertake a detailed assessment of the preferred site/s in terms of environmental criteria including the rating of significant impacts;
- to identify and recommend appropriate mitigation measures (to be included in an EMP) for potentially significant environmental impacts; and
- to undertake a fully inclusive public participation process to ensure that I&AP issues and concerns are recorded and commented on and addressed in the EIA process.

1.3. Details of the Environmental Assessment Practitioner

Bohlweki-SSI Environmental (Bohlweki-SSI) has been appointed as an Environmental Assessment Practitioner (EAP) by Eskom Sustainability and Innovation (S&I), to undertake the appropriate environmental studies for this proposed project. The professional team of Bohlweki-SSI has considerable experience in the environmental management and EIA fields.

Bohlweki-SSI has been involved in and/or managed several of the largest Environmental Impact Assessments undertaken in South Africa to date. A specialist area of focus is on assessment of multi-faceted projects, including the establishment of linear developments (national and provincial roads, and power lines), bulk infrastructure and supply (e.g. wastewater treatment works, pipelines, landfills), electricity generation and transmission, the mining industry, urban, rural and township developments, environmental aspects of Local Integrated Development Plans (LIDPs), as well as general environmental planning, development and management.

The particulars of the EAP are as follows:

Consultant:	Bohlweki-SSI Environmental
Contact Persons:	Prashika Reddy and Malcolm Roods
Postal Address	PO Box 867 Gallo Manor 2052
Telephone:	012 367 5973 / 011 798 6442
Facsimile:	012 367 5878 / 011 798 6010
E-mail:	prashikar@ssi.co.za / malcolmr@ssi.co.za
Expertise:	Prashika Reddy is a senior environmental scientist (BSc Honours – Geography) with experience in various environmental fields including: environmental impact assessments, environmental management plans, public participation and environmental monitoring and auditing. Ms Reddy has extensive experience in compiling environmental reports (Screening, Scoping, EIA and *Status Quo* Reports). Ms Reddy is/has been part of numerous multi-faceted large–scale projects, including the establishment of linear developments (roads, and power lines); industrial plants; electricity generation plants and mining-related projects. Malcolm Roods is currently employed as an Associate [HeD and Honours degree in Environmental Management (2000)] focusing on Environmental Impact Assessments (EIAs). Before joining SSI Engineers & Environmental Consultants in 2007, he worked at the Gauteng Department of Agriculture, Conservation and Environment (GDACE) for a period of six years, where he was responsible for the management and review of all EIAs and Environmental Management Frameworks (EMFs) falling within the Sedibeng & Ekurhuleni area. He was also responsible for the development and implementation of various environmental polices and guidelines in Gauteng. During his employment at GDACE, he reviewed many EIA applications for residential, commercial, industrial developments, etc and was also responsible for strategic sectoral input for infrastructure developments, which included the telecommunications, rail and roads sectors.

1.4. Structure of this Report

This report is divided into eleven chapters:

CHAPTER	CONTENT
Chapter 1 Introduction	Introduction to project and approach to the Environmental Scoping Study
Chapter 2 Strategic Energy Planning	Describes how the project fits in with Eskom's energy planning initiatives
Chapter 3 Project Description	Provides the technical description of the project as well as a description of the infrastructure
Chapter 4 Project Alternatives	Consideration of alternatives (site, pipeline and do-nothing) for the proposed project
Chapter 5 Legal Requirements	Brief scoping of national legislation and guidelines
Chapter 6 Public Participation Process	Overview of the public participation process conducted to date
Chapter 7 General Description of the Study Area	A depiction of the biophysical and social environment
Chapter 8 Potential Environmental Impacts – Biophysical Environment	A description of the environmental impacts on the biophysical environment
Chapter 9 Potential Environmental Impacts – Social Environment	A description of the environmental impacts on the social environment
Chapter 10 Conclusions and Recommendations	Conclusions and recommendations of the Environmental Scoping Study
Chapter 11 Plan of Study for EIA	Plan of Study for the EIA study

2. STRATEGIC ENERGY PLANNING

The use of renewable energy technologies is one of a mix of technologies needed to meet future energy consumption requirements and is being investigated as part of Eskom's long-term strategic planning and research process. Eskom's renewable energy strategy supports the South African Government's White Paper on Renewable Energy. Eskom is committed to investigating and evaluating the options for the diversification of the energy mix over time (including renewable resources).

2.1. Energy Policy Framework

The decision to expand Eskom's electricity generation capacity was based on national policy and informed by on-going strategic planning undertaken by the national Department of Minerals and Energy (DME), the National Energy Regulator of South Africa (NERSA) and Eskom. The hierarchy of policy and planning documentation that reflects this state of affairs is illustrated by Figure 2.1 and described below.

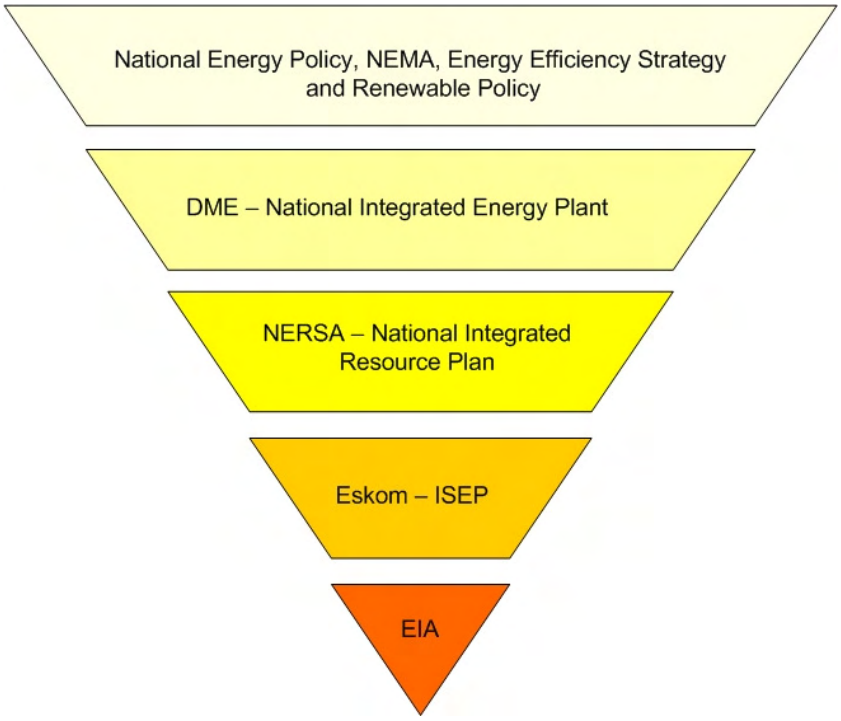

Figure 2.1: Hierarchy of policy and planning documents

2.1.1. White Paper on the Energy Policy of the Republic of South Africa – 1998

Development within the energy sector in South Africa is governed by the White Paper on the Energy Policy, published by DME in 1998. This White Paper sets out five objectives for the further development of the energy sector. The five objectives are as follows:

- Increased access to affordable energy services;
- Improved energy governance;
- Stimulating economic development;
- Managing energy-related environmental and health impacts; and
- Securing supply through diversity.

Furthermore, the Energy Policy identified the need to undertake an Integrated Energy Planning (IEP) process in order to achieve a balance between the energy demand and resource availability, whilst taking into account health, safety and environmental parameters. In addition, the policy identified the need for the adoption of a National Integrated Resource Planning (NIRP) approach to provide a long-term cost-effective resource plan for meeting electricity demand, which is consistent with reliable electricity supply and environmental, social and economic policies.

2.1.2. Integrated Energy Plan (IEP) – 2003

The DME commissioned the IEP to provide a framework in which specific energy policies, development decisions and energy supply trade-offs can be made on a project-by-project basis. The framework is intended to create a balance in providing low cost electricity for social and economic development, ensuring a security of supply and minimising the associated environmental impacts.

The IEP projected that the additional demand in electricity would necessitate an increase in electricity generation capacity in South Africa by 2007. Furthermore, the IEP has concluded that, based on energy resources available in South Africa, coal will be the primary fuel source for the current expansion period.

2.1.3. National Integrated Resource Plan (NIRP) – 2003/2004

In response to the White Paper's objective relating to affordable energy services, the National Electricity Regulator (now NERSA) commissioned a National Integrated Resource Plan (NIRP). The objective of the NIRP is to determine the least-cost supply option for the country, provide information on the opportunities for investment into new power stations and evaluate the security of supply.

The national electricity demand forecast took a number of factors into account. These are:

- A 2.8% average annual economic growth;
- The development and expansion of a number of large energy-intensive industrial projects;
- Electrification needs;
- A reduction in electricity-intensive industries over the 20 year planning horizon;
- A reduction in electricity consumers – NIRP anticipates people switching to the direct use of natural gas;
- The supply of electricity to large mining and industrial projects in Namibia and Mozambique; and
- Typical demand profiles.

The outcome of the NIRP determined that while the coal-fired option of generating electricity would still be required over the next 20 years, additional energy generation facilities would be required by 2007.

2.1.4. Eskom Integrated Strategic Electricity Planning (ISEP)

Eskom applies an Integrated Strategic Electricity Planning (ISEP) process to identify long-term options regarding both the supply and demand sides of electricity provision in South Africa. The most recently approved ISEP plan identifies the need for increased peaking supply by about 2006/7 and base load by about 2010. Figure 2.2 overleaf illustrates Eskom's "project funnel", which shows the range of supply options being considered by Eskom to meet the increasing demand for electricity in the country. There are currently a number of projects in the project funnel ranging from research projects to new-build projects. Research projects include a demonstration solar power project, a demonstration wind energy project and the pebble bed modular reactor (PBMR), carbon capture and storage (CCS) and Underground Coal Gasification (UCG). Three 'mothballed' stations, *viz.* the Camden, Komati and Grootvlei power stations, are currently being returned-to-service, and are therefore reflected in the 'build' portion of the funnel diagram.

Based on the above planning processes, and in order to meet the projected increase in the demand for electricity, various projects are underway and are at various stages of implementation (see Figure 2.2). These include base load technologies such as coal fired plants, combined cycle gas turbines and conventional nuclear as well as peaking technologies such as pumped storage schemes and open cycle gas turbines.

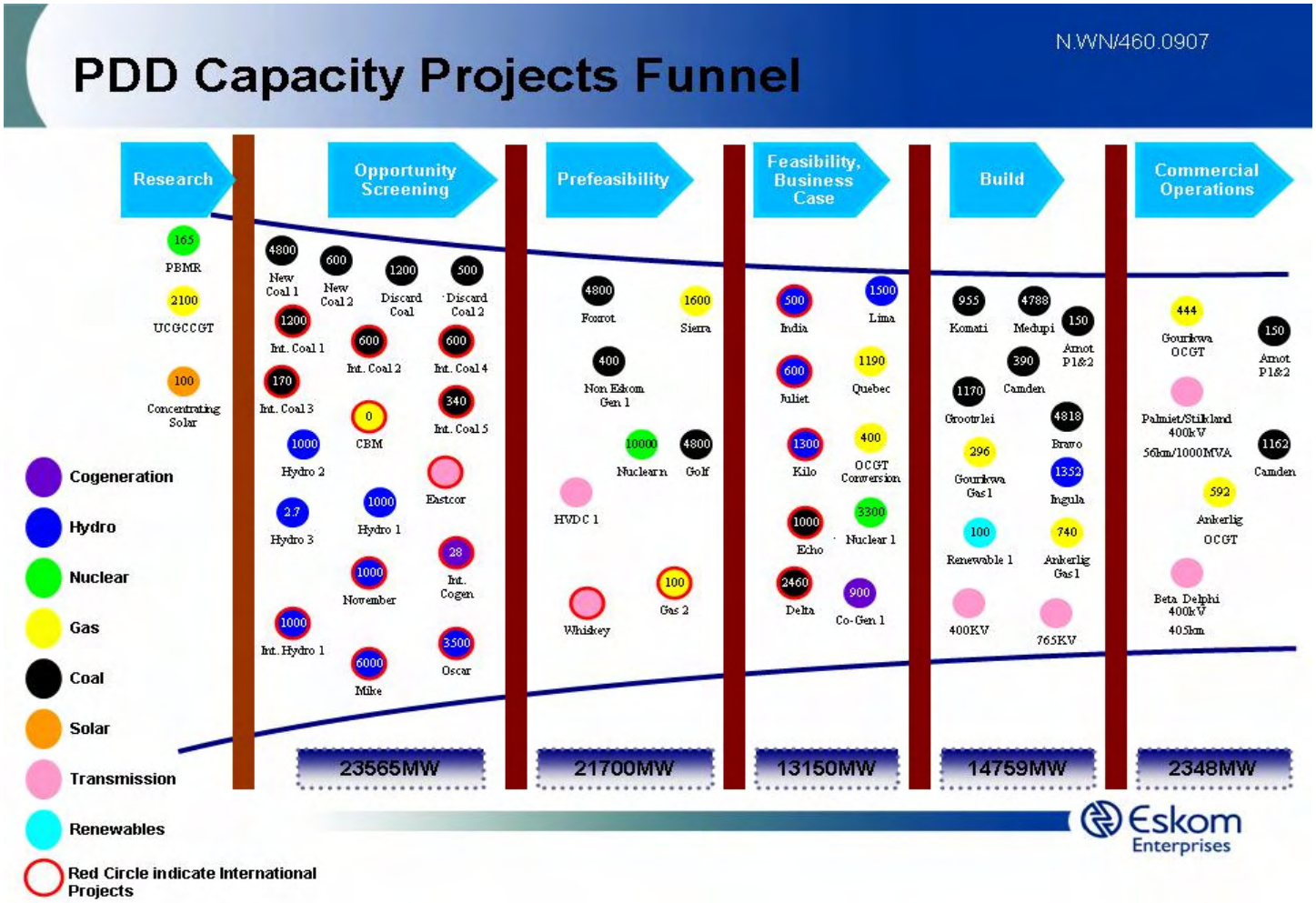

Figure 2.2: Project Funnel (August 2008)

Eskom is committed to investigating and evaluating various options for the diversification of the energy mix over time (including renewable resources) and as part of an ongoing effort to assess the viability/feasibility of all supply-side options, a number of power generation technologies, not yet implemented in South Africa on a commercial basis, are being evaluated in terms of technical, socio-economic and environmental aspects. One such type of technology is Combined Cycle Gas Turbine (CCGT) power plant that uses gas from an Underground Coal Gasification (UCG) process as a primary energy, which has been successfully proven to be commercially viable in other countries.

The Underground Coal Gasification (UCG) concept provides promising prospects for future energy supplies. UCG is a process where coal is gasified *in situ*. A matrix of wells is drilled into the coal bed, the coal is ignited and air/oxygen and water are pumped into the injection wells. Fire is essentially used to "mine" the coal and produce syngas (a mixture of CO_2, H_2, CH_4 and CO), which can be used directly as a fuel for either boilers or gas turbines.

Eskom plans to use the gas from the UCG mining facility, which will be implemented as a full commercial operation, as a primary source of fuel for the 2100MW CCGT power plant to be implemented as a full-scale commercial operation.

Figure 2.3: Project Flow

3. PROJECT DESCRIPTION

3.1. UCG Process Principles

UCG involves injecting steam and air into a cavity created in an underground coal seam, to form a synthetic natural gas. The underground cavity is created as the coal burns, and the boundaries of the cavern form the walls of an underground gasification reactor (refer to Figure 3.1). UCG has the potential to extract coal resources previously regarded as either uneconomic or inaccessible due to depth, seam thickness, seam slope, seam fracturing and displacement, or other mining and safety considerations. The ideal requirements for UCG are generally the opposite of the requirements for conventional underground mining, and hence UCG offers opportunity for expanding South Africa's mineable coal reserve base by extracting coal previously disregarded as being unminable.

The UCG plant is located in the Majuba coalfield on the farm Roodekopjes 67HS, about 7km east of the Majuba Power Station. The farm presently being mined (Roodekopjes 67HS) only comprises some 1500ha of coal resources, excluding the southern portions on which the existing Majuba Power Station, an airfield and transmission line servitudes are situated.

Eskom has been granted the following authorisations for the exploration and testing phases (Phases 1 and 2) of the UCG project:

- New Order prospecting right granted in 2005 (*F/2005/03/11/0001*) by the Department of Minerals and Energy (DME). Extension application lodged in November 2008 (approval pending).
- Exemption from conducting and EIA, in terms of section 22 of the Environmental Conservation Act (Act 73 of 1989) was granted by the Mpumalanga Department of Agriculture and Land Administration in 2005, for the construction of a 7km gas pipeline between the Majuba Coalfields and Majuba Power Station (*Ref 17.2.1EV1*).
- Exemption from the requirements of sections 9 and 12 of the Atmospheric Pollution Prevention Act (Act 45 of 1965) granted by the Department of Environmental Affairs and Tourism in 2005 (*Ref 23/4/2/1448*).
- Renewal of the prospecting rights on 24 February 2009 (*MP30/5/1/1/2/1144 PR*) issued by the DME.

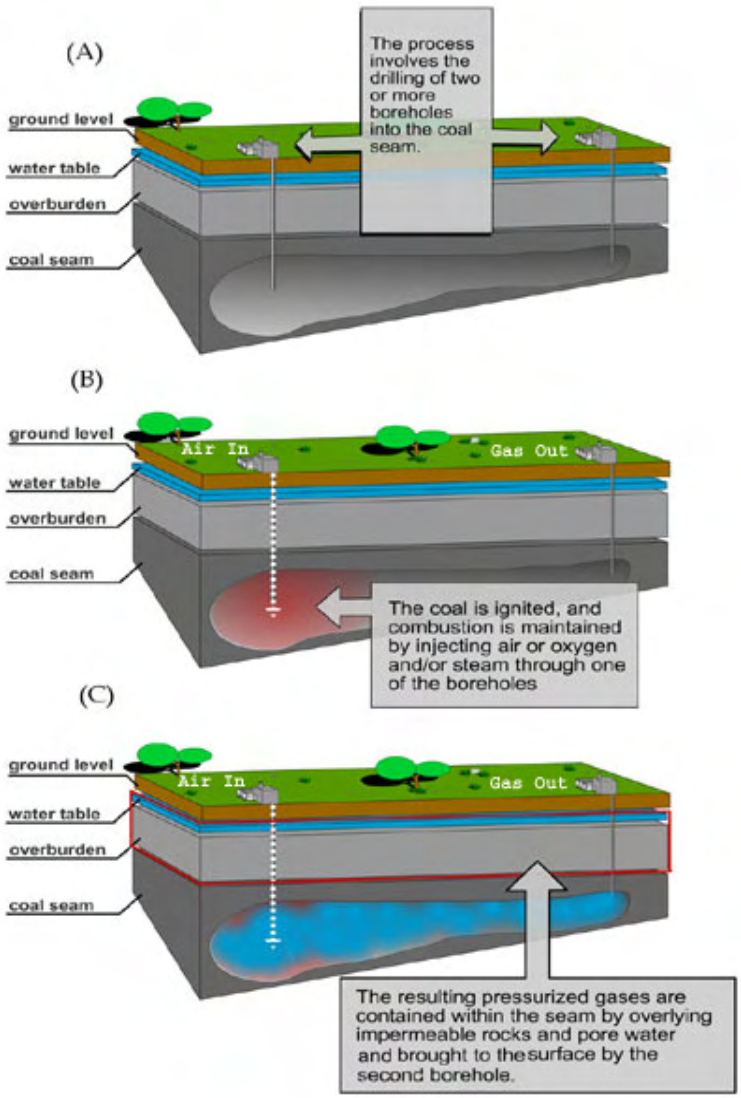

Figure 3.1: Schematic illustration of the UCG Process

3.2. Integration of UCG gases into an Open Cycle Gas Turbine power plant

An Open Cycle Gas Turbine (OCGT) Power Station consists of a combustion chamber, a compressor, a gas turbine and a generator. The compressor and the gas turbine are mounted on the same shaft. The compressor draws fresh air from the atmosphere and raises the air pressure, by compressing it, before sending this air to the combustion chamber. In the combustion chamber, fuel (from the UCG operation) is added to the compressed air and the total mixture is combusted resulting in hot gas entering the turbine at a temperature greater than 1 300ºC. This hot gas imparts the majority of its energy via a turbine to both the compressor and a generator. The open cycle gas turbine discharges exhaust heat to the atmosphere. Figure 3.2 provides a schematic representation of the proposed plant.

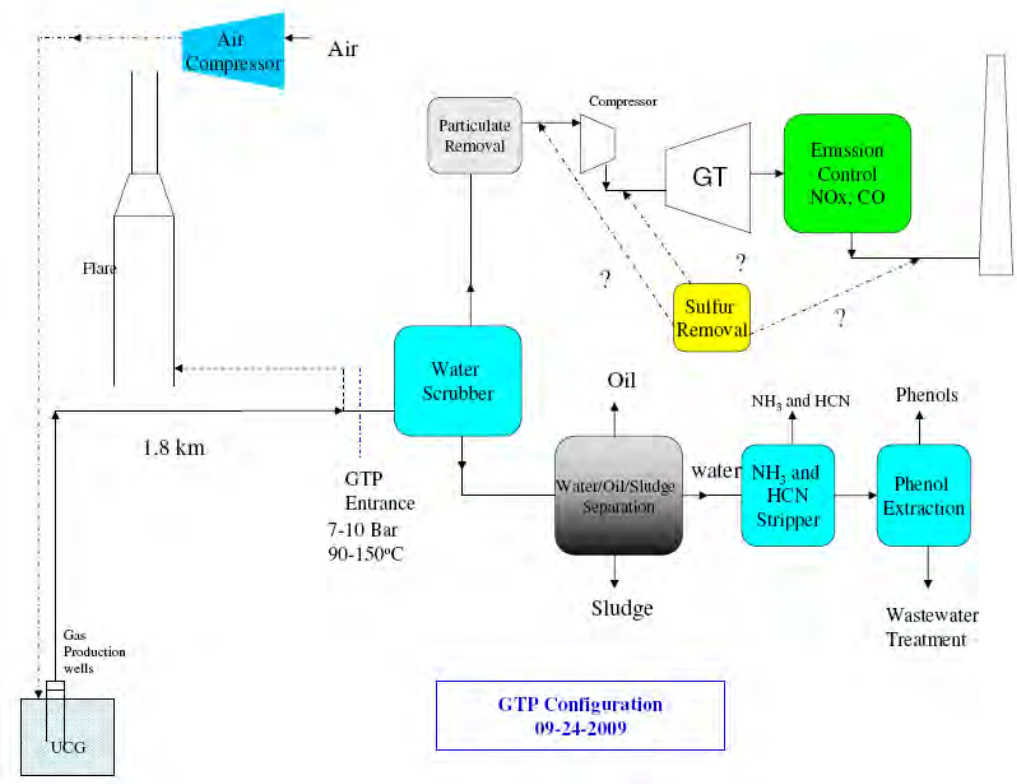

Figure 3.2: A schematic representation of the proposed plant

3.3. Components of the Power Island

The key components of the power island include:

- 40MW gas turbine
- Start-up fuel storage
- Station generators
- Generating transformers
- HV yard (88kV) – electricity will be fed into a 88KV substation and then connected to the National Grid
- Chimney

3.4. Exploration Activities and Gas Field

Exploration activities will continue with drilling taking place on the mining property as and when required throughout the life of the mining operation. The gas field will consist of a network of surface pipes connected to the production wells. These pipes will be connected at manifolds and the gas will be transported to the central plant where it will be cleaned and combusted in the OCGT plant. As the mining operation follows the coal deposits (moves after fresh coal), these pipes will be moved on the surface, while already gasified areas will be stripped of all surface pipe work.

3.4.1. Gas Treatment Plants

Gas treatment plants will be constructed to clean the gas before it is sent for electricity production. The components of the gas treatment plant are provided below:

- Cyclone
- Quenching Column (G-L-S separation) – approximate height: 35 m
- Water scrubbing unit
- Hydrocarbon scrubbing unit
- Heat exchanger – cooling towers
- Liquid separation (distillation column)
- Emergency gas flare stack – approximate height: 35 m
- Auxiliary pumps, motors and other small equipment
- Chemical solvent storage and regeneration tanks
- Trace metal filtration system
- Gas compressor
- Hydrocarbon storage tanks
- Acid gas (sulphur) removal system

3.4.2. Water Treatment Plant

A water treatment plant with the capacity of 25000l/h will be constructed to treat the effluent from the plant. The water will be reused within the system after treatment. The water treatment plant will consist of the following components:

- Raw water supply pipeline from the Majuba Power Station
- Raw water storage tanks
- Potable water plant
- Potable water storage tanks
- Demineralised Reverse Osmosis plant
- Demineralised water storage tanks
- Fire protection system and storage tank
- Wastewater treatment facility
- Sewerage storage tanks - will be collected by local municipality.
- By-product storage tanks

3.4.3. Condensate Collection Pond

An additional 80 000m^3 will be required for the temporary management of effluent before the construction of the wastewater treatment plant.

3.4.4. Compressor Plant with 4 Stage Compressions

Four (4) compressors will initially be installed although provision for a fifth will be made in the site layout. Three compressor units will operate continuously, 24 hours/day, with one unit on standby. Three compressors will be powered through a dedicated gas driven turbine generator that will use the syngas as a power source. One compressor will be powered through electricity generated on site.

3.4.5. Storage Tanks

Additional tanks for fuel storage as well as hydrocarbons and hydrocarbon based condensates will be required as part of the extension of the activities. Three additional tanks with a total capacity of 68m^3 will be erected. The combined volume of the tanks on site will be approximately 119m^3.

Table 3.1: Existing and new tanks

TANKS	CAPACITY (m^3)
Hydrocarbon tanks (2)	23
Settling tanks (2)	5
Diesel tanks (2)	23
New tanks	68

3.4.6. Additional Infrastructure

Other infrastructure for the proposed project includes:

- An 88kV transmission line
- Auxiliary cooling systems – cooling towers
- Office building including centralized control rood and ablution facilities.
- Access roads – the entrance to the site will be relocated to the farm Bergvliet 65HS, where the administration offices will be located. Existing roads and tracks will be used as far as possible although this might necessitate the upgrade of such roads
- Delivery and collection bays for road transport to all chemical solvent and by-product tanks.

4. PROJECT ALTERNATIVES

In terms of the Environmental Impact Assessment (EIA) Regulations, feasible alternatives should be considered within the Environmental Scoping Study. All identified, feasible alternatives should be evaluated in terms of social, biophysical, economic and technical factors.

4.1. Strategic Alternatives

Strategic alternatives refer to those alternatives that were considered at a higher level and prior to this project-level EIA. Similarly, alternative methods of generating electricity were identified and have been addressed as part of the Integrated Energy Planning (IEP), the National Integrated Resource Plan (NIRP) from the National Energy Regulator of South Africa (NERSA), and the Integrated Strategic Electricity Plan (ISEP) undertaken by Eskom (refer to Chapter 2 of this report). This strategic evaluation, together with the technical evaluation, concluded that the gas turbine technology is the only technology that is able to utilise the UCG fuel and generate electricity with high efficiency. Alternative methods of generating electricity will not be considered further as part of this study.

This Scoping Study therefore considers a number of other alternatives including location of the gas treatment plants, pipelines, road and water supply corridors as well as the do-nothing alternative (discussed below) considered in terms of the proposed 40MW Open Cycle Gas Turbine (OCGT) power plant in the Amersfoort area, and does not evaluate any other power generation options being considered by Eskom.

4.2. Do-nothing Alternative

Electricity cannot be stored in large quantities and must be used as it is generated. Therefore, electricity must be generated in accordance with supply-demand requirements. The demand for electricity in South Africa is currently growing. This growing electricity demand is placing increasing pressure on Eskom's existing power generation capacity. South Africa is expected to require additional peaking capacity (i.e. times of peak demand for electricity) and baseload capacity in the medium- to long-term, depending on the average growth rate.

This has put pressure on the existing installed capacity to be able to meet the energy demands into the future, particularly during peak electricity demand times.

South Africa is endowed with 32-billion tons of coal reserves, which are rated as economically extractable, and a further 160-billion tons of coal resources, which are judged uneconomic. Until fairly recently, there was little prospect of exploiting this enormous pent-up energy potential.

UCG technology could potentially unlock this energy resource, which was developed commercially in the former Soviet Union and is now being tested locally. The UCG

process has been commercially proven on several sites in the former Soviet Union, and a pilot plant operated successfully from 1999 to 2003 in Chinchilla, in Australia. Moreover, the UCG technology in combination with a combined cycle power station will:

- Significantly reduce the emissions footprint of a coal-fired power station (see Figure 4.1).

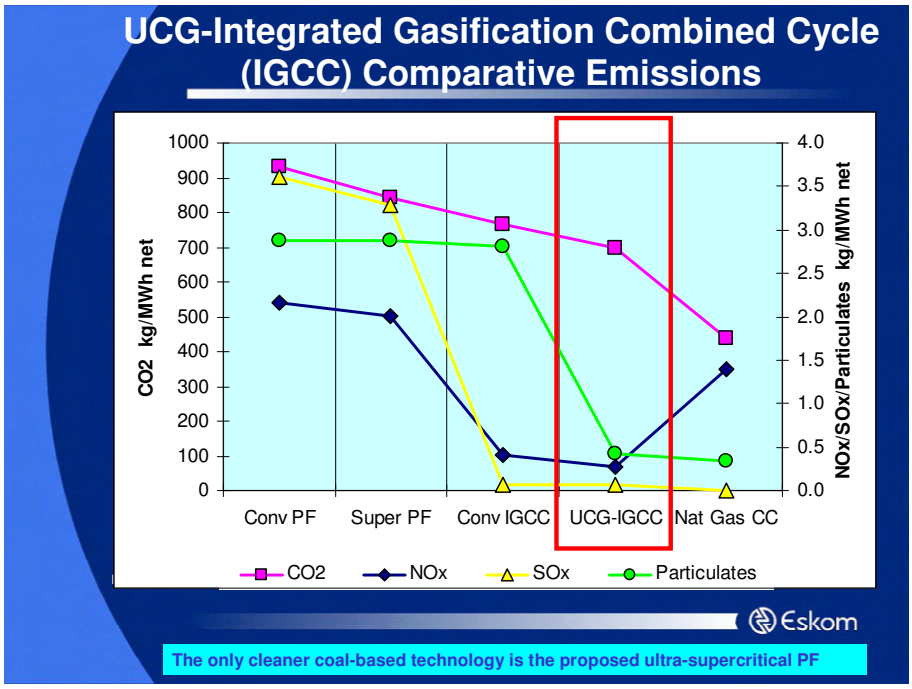

Figure 4.1: UCG-Integrated Gasification Combined Cycle Comparative Emissions

- Increase the overall resource utilisation efficiency (Figure 4.2) especially when the gas is used for power generation in a combined cycle power station. UCG as a mining technology also effectively extends South Africa's coal reserves, by allowing the extraction of coal previously disregarded as being unminable.
- Enables Eskom to position new coal generating plant far more strategically, to support demand side needs and stabilise the transmission network through the broader geographic availability of coal suitable for UCG.

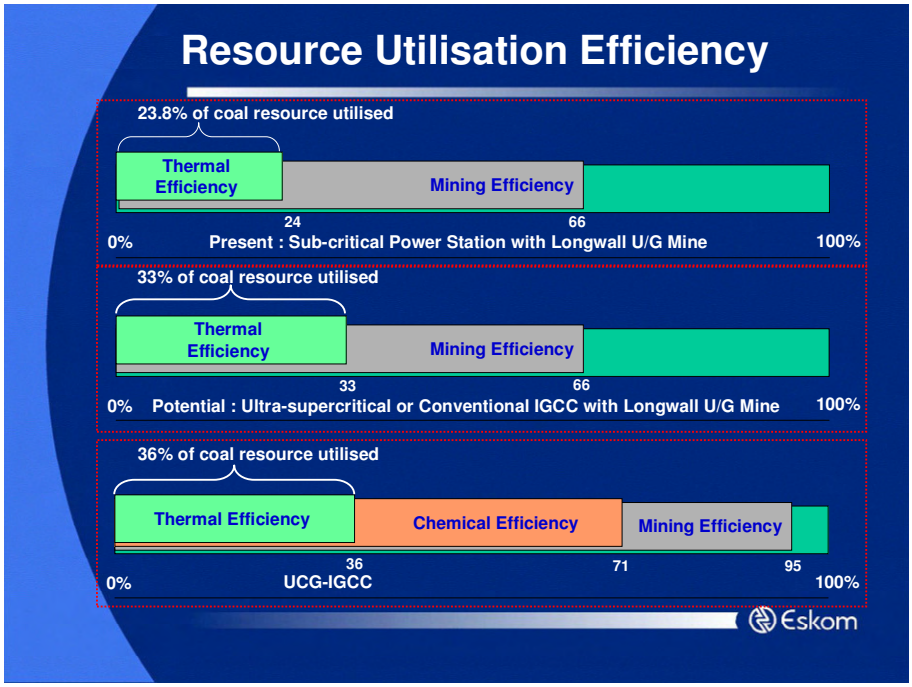

Figure 4.2: Resource utilisation efficiency

- Increase Eskom's operational flexibility and efficiency, by allowing the coal mine and power station to effectively integrate.
- On a large scale, offers the opportunity to reduce the cost of electricity from new coal-based power stations. It achieves this through an inherently simpler mining process, and a shorter resource-to-electricity production supply chain.
- The UCG technology is modular, and Eskom has already pioneered the basis of the first module. The modularity, availability and relative simplicity of major plant components enables faster lead times than for conventional coal plants.

The "do-nothing" option will contribute to Eskom not being able to fulfil its mandate and meet the projected growth in demand for electricity. This has serious short- to medium-term implications for socio-economic development in South Africa.

4.3. Site Alternatives

A specific site has been selected for the 40MW OCGT. This site has already been cleared under the auspices of a prospecting licence issued by the former Department of Minerals and Energy for the UCG project, which included consent for the construction of a 28MW plant.

The criteria behind the site selection are listed below:

- The initial scope of the project was co-firing into the Majuba Power Station boilers. Based on this scope a contract was placed to design the pipeline to Majuba Power Station. Exemption from conducting and EIA, in terms of section 22 of the Environmental Conservation Act (Act 73 of 1989) was granted by the Mpumalanga Department of Agriculture and Land Administration in 2005, for the

construction of the pipeline (*Ref 17.2.1EV1*). The design was completed and the construction contract was being placed at the time the scope changed to include the 40 MW OCGT demonstration plant.

- In order to include the 40 MW demonstration phase and to still achieve the co-firing scope it was decided to locate a position to include the 40 MW demonstration plant.
- The plant had to be situated off-coal in an area where it will not neutralise any coal reserves.
- The plant had to be on Eskom owned land.
- The plant has to be close to infrastructure to minimise cost.
- The plant had to be in a position where it would intersect the pipeline that has already been designed.
- The plant had to be in an area which is not environmentally sensitive.

Based on the above criteria the specific site was selected. It was close to infrastructure, on the pipeline route, on Eskom land, away from the river (stream), and on the only spot where coal will not be mined in future.

The only other site alternative that met all the criteria was in a wetland/stream area, further west of the current position but still on the pipeline route. Due to the environmental sensitivity of this area, the project is limited to a single location alternative.

4.4. Alternatives for the Positioning of the Gas Treatment Plants

Alternative sites will have to be identified to place the commercial gas treatment facilities and pipelines. The commercial plant will have approximately five (5) gas treatment plants, each significantly bigger in size (approximately 25 ha each) than what is required for the demonstration plant. The engineering for these plants will only commence after successful operation of the 40 MW demonstration plant.

The pipeline transportation routes from the gas treatment plants have not been determined at this stage, but will be identified, in the form of corridors, and addressed in the EIA phase of the project (refer to Figure 1.1 in Chapter 1).

The following core farms will be investigated in the EIA study for the placement of the gas treatment plants and associated pipelines:

- Roodekopjes 67HS
- Rietfontein 66 HS (including Klein Rietfontein 117HS)
- Japtrap 115HS
- Palmietspruit 68HS
- Tweedepoort 54HS
- Koppieskraal 56 HS
- Bergvliet 65 HS
- Weiland 59 HS
- Strydkraal 53HS

Of the farms mentioned above, Roodekopjes 67HS, Rietfontein 66 HS (including Klein Rietfontein 117HS) and Japtrap 115HS have been expropriated by Eskom.

4.5. Water Supply Pipeline

Water supply to the OCGT power plant will be *via* a pipeline from the quota allocated to the existing coal-fired Majuba Power Station. The exact length and route of the alignment of the proposed pipeline is not known at this stage. A more detailed description and assessment of proposed alignments will follow in the EIA phase, in the form of corridors, from the sources of water to the point of usage.

4.6. Internal Roads

Appropriate access roads (temporary and permanent) will be constructed to link the proposed power station with the nearby existing roads network. These routes will be identified in the form of access roads corridors from which alignments may be designed. The corridors will cater for temporary (to be used during construction) and permanent (to be used during operation) access and site roads. All the corridors will be identified and studied in detail in the EIA phase of the process.

4.7. Fuel Supply Pipelines

Fuel supply will be provided in the form of a high quality burnable gas from the UCG process. A pipeline already exists from the UCG pilot plant to the Majuba Power Station. The fuel pipeline transportation routes (secondary and primary pipeline connecting the demonstration plant) from the proposed gas treatment plants have not been determined at this stage, but will be identified, in the form of corridors, and addressed in the EIA phase of the project.

5. LEGAL REQUIREMENTS

In order to protect the environment and ensure that this development is undertaken in an environmentally responsible manner, there are a number of significant pieces of environmental legislation that focus this assessment. They are the following:

5.1. The Constitution of South Africa

The Bill of Rights, in the Constitution of South Africa (No. 108 of 1996), states that everyone has a right to a non-threatening environment and requires that reasonable measures are applied to protect the environment. This protection encompasses preventing pollution and promoting conservation and environmentally sustainable development. These principles are embraced in NEMA and given further expression.

5.2. National Legislation and Regulations

5.2.1. The National Environmental Management Act (No 107 of 1998)

The National Environmental Management Act (NEMA) (No. 107 of 1998) states that the principles of Integrated Environmental Management (IEM) should be adhered to in order to ensure sustainable development. A vital underpinning of the IEM procedure is accountability to the various parties that may be interested in or affected by a proposed development. Public participation is a requirement of the IEM procedure, in terms of the identification of potentially significant environmental impacts during the Scoping Phase. The IEM procedure aims to ensure that the environmental consequences of development proposals are understood and adequately considered during all stages of the project cycle, and that negative aspects are resolved or mitigated and positive aspects enhanced.

Furthermore, Section 28(1) of the Act states that “every person who causes or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring”. If such pollution cannot be prevented then appropriate measures must be taken to minimise or rectify such pollution.

The NEMA EIA regulations, which replace the Environment Conservation Act - ECA EIA regulations, have been promulgated and came into effect on 3 July 2006. Sections 24 and 24D of NEMA, as per Government Notices R386 and R387 of April 2006, contain a schedule of activities that may have substantial detrimental effects on the environment and which require authorisation from the competent environmental authority.

The nature of the proposed project includes activities listed in these schedules. The primary triggers are (according to Government Notice R386 and R387) included in Table 5.1.

Table 5.1: Listed activities according to GN R.386 and R.387

	RELEVANT ACTIVITY
GOVERNMENT NOTICE (GN) R386 ACTIVITY NO(S):	
1 (k)	The construction of facilities or infrastructure, including associated structures or infrastructure, for – The bulk transportation of sewage and water, including storm water, in pipelines with - (i) an internal diameter of 0.36 meters or more; or (ii) a peak throughout of 130 liters per second or more.
1(l)	The transmission and distribution of electricity above ground with a capacity of more than 33 kilovolts and less than 120 kilovolts.
1 (m)	Any purpose in the one in ten year flood line of a river or stream, or within 32 meters from the bank of a river or stream where the floodline is unknown, excluding purposes associated with existing residential use, but including: (i) canals; (ii) channels; (iii) bridges; (iv) dams; and (v) weirs.
1 (o)	The recycling, re-use, handling, temporary storage or treatment of general waste with a throughput capacity of 20 cubic meters or more daily average measured over a period of 30 days, but less than 50 tons daily average measured over a period of 30 days.
1 (p)	The temporary storage of hazardous waste.
8	Reconnaissance, prospecting, mining or retention operations as provided for in the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), in respect of such permissions, rights, permits and renewals thereof.
9	In relation to permissions, rights, permits and renewals granted in terms of 8 above, or any other similar right granted in terms of previous mineral or mining legislation, the undertaking of any prospecting or mining related activity or operation within a prospecting, retention or mining area, as defined in terms of section of 1 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).
12	The transformation or removal of indigenous vegetation of 3 hectares or more or of any size where the

	RELEVANT ACTIVITY
	transformation or removal would occur within a critically endangered or an endangered ecosystem listed in terms of section 52 of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).
13	The abstraction of groundwater at a volume where any general authorization issues in terms of the National Water Act, 1998 (Act No. 36 of 1998) will be exceeded.
14	The construction of any masts of any material or type and of any height, including those used for telecommunication broadcasting and radio transmission, but excluding – (a) masts of 15 metres and lower exclusively used (i) by radio amateurs; or (ii)for lighting purposes (b) flag poles; and (c) lightning conductor poles.
15	The construction of a road that is wider than 4 meters or that has a reserve wider than 6 meters, excluding roads that fall within the ambit of another listed activity or which are access roads of less than 30 meters long.
17	Phased activities where any one phase of the activity may be below a threshold specified in this Schedule but where a combination of the phases, including expansions or extensions, will exceed a specified threshold.
24	The recommissioning or use of any facility or infrastructure, excluding any facility or infrastructure that commenced under an environmental authorisation issued in terms of the Environmental Impact Assessment Regulations, 2006 made under section 24(5) of the Act and published in Government Notice No. R. 385 of 2006, after a period of two years from closure or temporary closure, for - (a) electricity generation; (b) nuclear reactors and nuclear fuel storage; or (c) facilities for any process or activity, which require permission, authorisation, or further authorisation, in terms of legislation governing the release of emissions, pollution, effluent or waste prior to the facility being recommissioned.
25	The expansion of or changes to existing facilities for any process or activity, which requires an amendment of an existing permit or license or a new permit or license in terms of legislation governing the release of emissions, pollution, effluent.

	RELEVANT ACTIVITY
GOVERNMENT NOTICE (GN) R387 ACTIVITY NO(S):	
1 (a)	The construction of facilities or infrastructure, including associated structures or infrastructure, for - The generation of electricity where – (i) the electricity output is 20 megawatts or more; or (ii) the elements of the facility cover a combined area in excess of 1 hectare.
1 (c)	The above ground storage of a dangerous good, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of 1000 cubic meters or more at any one location or site including the storage of one or more dangerous goods, in a tank farm.
1(d)	The refining of gas, oil and petroleum products.
1 (e)	Any process or activity which requires a permit or license in terms of legislation governing the generation or release of emissions, pollution, effluent or waste and which is not identified in Government Notice No. R. 386 of 2006.
1(g)	The use, recycling, handling, treatment, storage or final disposal of hazardous waste.
1 (j)	The bulk transportation of dangerous goods using pipelines, funiculars or conveyors with a throughput capacity of 50 tons or 50 cubic meters or more per day.
1 (p)	The treatment of effluent, wastewater or sewage with an annual throughput capacity of 15 000 cubic metres or more.
1(q)	The incineration, burning, evaporation, thermal treatment, roasting or heat sterilisation of waste or effluent, including the cremation of human or animal tissue.
2	Any development activity, including associated structures and infrastructure, where the total area of the developed area is, or is intended to be, 20 hectares or more.
7	Reconnaissance, exploration, production and mining as provided for in the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), as amended in respect of such permits and rights.
8	In relation to permits and rights granted in terms of 7 above, or any other right granted in terms of previous mineral legislation, the undertaking of any reconnaissance exploration, production or mining related activity or operation within a exploration,

	RELEVANT ACTIVITY
	production or mining area, as defined in terms of section 1 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

5.2.2. The National Heritage Resources Act (No 25 of 1999)

In terms of section 38 (subject to the provisions of subsections (7), (8) and (9) of the Act), any person who intends to undertake a development categorised as:

- The construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- The construction of a bridge or similar structure exceeding 50 m in length;
- Any development or other activity which will change the character of a site:
  - Exceeding 5 000 m² in extent;
  - Involving three or more existing erven or subdivisions thereof; or
  - Involving three or more erven or divisions thereof which have been consolidated within the past five years; or
  - The costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- The re-zoning of a site exceeding 10 000 m^2 in extent; or
- Any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

The above provisions do not apply to the specified development if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act, 1989 (Act No. 73 of 1989), or the integrated environmental management guidelines issued by the Department of Environment Affairs and Tourism, or the Minerals Act, 1991 (Act No. 50 of 1991), or any other legislation and provided that the consenting authority must ensure that the evaluation fulfils the requirements of the relevant heritage resources authority and any comments and recommendations of the relevant heritage resources authority with regard to such development have been taken into account prior to the granting of the consent.

The Mpumalanga offices of the South African Heritage Resource Agency (SAHRA) will be provided with all relevant documentation, since they have a statutory role to play in the decision-making process, acting as commenting authorities.

5.2.3. The Minerals and Petroleum Resources Development Act (No 28 of 2002)

The purposed of the Minerals and Petroleum Resources Development Act (No 28 of 2002) is to make provision for equitable access to and sustainable development of

the nation's mineral and petroleum resources; and to provide for matters connected therewith. The Act is administered by the Department of Minerals and Energy.

The Act provides that the environmental management principles set out in the National Environmental Management Act No 107 of 1998 shall apply to all prospecting and mining operations and serve as a guideline for the interpretation, administration and implementation of the environmental requirements of the Act. Any prospecting or mining operations must be conducted in accordance with the generally accepted principles of sustainable development by integrating social, economic and environmental factors into the planning and implementation of prospecting and mining projects in order to ensure that the exploitation of minerals resources serve both present and future generations.

5.2.4. National Environmental Management: Air Quality Act (No 39 of 2004)

The National Environmental Management: Air Quality Act No. 39 of 2004 ("the Air Quality Act) repeals the whole of the Air Pollution Prevention Act (No. 45 of 1965). The purpose of the Air Quality Act is to reform the law regulating air quality in order to protect the environment by providing measures for the prevention of pollution and ecological degradation, while, promoting justifiable economic and social development. The Air Quality Act seeks to provide national standards regulating air quality monitoring management and control.

5.2.5. The National Water Act (No 36 of 1998)

The purpose of the National Water Act No 36 of 1998 ('the National Water Act") is to provide for fundamental reform of the law relating to water resources; to repeal certain laws; and to provide for matters connected therewith.

In terms of section 21, the water uses that are recognised for purposes of the National Water Act include the following:

5.2.5.1. Water Use

- Section 21(a) – taking water from a water resource;
- Section 21(b) – storing water;
- Section 21(c) – impeding or diverting the flow of water in a watercourse;
- Section 21(d) – engaging in a stream flow reduction activity contemplated in section 36 (currently only the use of land for afforestation which has been or is being established for commercial purposes);
- Section 21(e) – engaging in a controlled activity identified as such in section 37(1) (which includes the intentional recharging of an aquifer with any waste or water containing waste) or declared under section 38(1);
- Section 21(f) – discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;
- Section 21(g) – disposing of waste in a manner which may detrimentally impact on a water resource;
- Section 21(h) – disposing in any manner of water which contains waste from, or

which has been heated in, any industrial or power generation process;
- Section 21(i) – altering the bed, banks, course or characteristics of a watercourse;
- Section 21(j) – removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and
- Section 21(k) – using water for recreational purposes.

In terms of the definitions contained in section 1 of the National Water Act, "water resource" includes a watercourse, surface water, estuary, or aquifer. "Aquifer" means a geological formation which has structures or textures that hold water or permit appreciable water movement through them.

"Watercourse" means a river or spring; a natural channel in which water flows regularly or intermittently; a wetland, lake or dam into which, or from which, water flows; and any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.

Furthermore, in terms of the definitions contained in section 1 of the National Water Act, "waste" "includes any solid material or material that is suspended, dissolved or transported in water (including sediment) and which is spilled or deposited on land or into a water resource in such volume, composition or manner as to cause, or to be reasonably likely to cause, the water resource to be polluted".

5.2.5.2. Controlled Activities

The Minister of Water and Environmental Affairs is allowed to regulated activities which have a detrimental impact on water resources by declaring them to be controlled activities. The following are considered to be controlled activities:

- Irrigation of any land with waste or water containing waste generated through any industrial activity or by a water work;
- An activity aimed at the modification of atmospheric precipitation;
- A power generation activity which alters the flow regime or a water resource;
- Intentional recharging of an aquifer with any waste or water containing waste; and
- An activity which has been declared as such under section 38.

No person may undertake a controlled activity unless such person is authorised to do so by or under this Act. The Minister may, by notice in the Gazette, in general or specifically, declare an activity to be a controlled activity. Such notice might be for a specific activity on a specific site.

5.2.6. National Environmental Management: Waste Act (No 59 of 2008)

The National Environmental Management Waste Act (No 59 of 2008) reforms the law regulating waste management in order to protect health and the environment by

providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development; to provide for institutional arrangements and planning matters; to provide for national norms and standards for regulating the management of waste by all spheres of government; to provide for specific waste management measures; to provide for the licensing and control of waste management activities; to provide for the remediation of contaminated land; to provide for the national waste information system; to provide for compliance and enforcement; and to provide for matters connected therewith.

The objects of this Act are—

a) to protect health, well-being and the environment by providing reasonable measures for –
    i) minimising the consumption of natural resources;
    ii) avoiding and minimising the generation of waste;
    iii) reducing, re-using, recycling and recovering waste;
    iv) treating and safely disposing of waste as a last resort;
    v) preventing pollution and ecological degradation;
    vi) securing ecologically sustainable development while promoting justifiable economic and social development;
    vii) promoting and ensuring the effective delivery of waste services;
    viii) remediating land where contamination presents, or may present, a significant risk of harm to health or the environment; and
    ix) achieving integrated waste management reporting and planning;
b) to ensure that people are aware of the impact of waste on their health, well-being and the environment;
c) to provide for compliance with the measures set out in paragraph *(a)*; and
d) generally, to give effect to section 24 of the Constitution in order to secure an environment that is not harmful to health and well-being.

The Waste Management Act must be read with the applicable provisions of NEMA and its interpretation and application must be guided by the national environmental principles contained in section 2 of NEMA.

5.3. Legal Requirements in terms of other Acts

In addition to the above, the following Acts may have some bearing on the proposed activities:

Table 5.2: Legal requirements in terms of other Acts

LEGISLATION	RELEVANT SECTIONS	RELATES TO
The Conservation for Agricultural Resources Act (No 43 o 1983) and Regulations	Section 6	Implementation of control measures for alien and invasive plant species.
National Forests Act (No 84 of 1998) and Regulations	Section 7 Sections12-16	No person may cut, disturb, damage or destroy any indigenous, living tree in a natural forest, except in terms of a licence issued under section 7(4) or section 23; or an exemption from the provisions of this subsection published by the Minister in the Gazette. These sections deal with protected trees, with the Minister having the power to declare a particular tree, a group of trees, a particular woodland, or trees belonging to a certain species, to be a protected tree, group of trees, woodland or species. In terms of section 15, no person may cut, disturb, damage, destroy or remove any protected tree; or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire of dispose of any protected tree, except under a licence granted by the Minister.
Fencing Act (No 31 of 1963)	Section 17	Any person erecting a boundary fence may clean any bush along the line of the fence up to 1.5 meters on each side thereof and remove any tree standing in the immediate line of the fence. However, this provision must be read in conjunction with the environmental legal provisions relevant to protection of flora.
National Environmental Management: Biodiversity Act (No 10 of 2004)	Sections 65-69 Section 71 and 73	These sections deal with restricted activities involving alien species; restricted activities involving certain alien species totally prohibited; and duty of care relating to listed invasive species. These sections deal with restricted activities involving listed